



What clinical differences distinguish depressed teens with and without comorbid externalizing problems?

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ABSTRACT

Objective: This study examined differences in co-occurring symptoms, psychosocial correlates, health care utilization and functional impairment in youth who screened positive for depression, stratified by whether or not they also self-reported externalizing problems.

Methods: The AdoleSCent Health Study examined a random sample of youth ages 13–17 enrolled in a health care system. A total of 2291 youth (60.7% of the eligible sample) completed a brief depression screen; the two-item Patient Health Questionnaire. The current analyses focus on a subset of youth ($n=113$) who had a follow-up interview and screened positive for possible depression on the Patient Health Questionnaire 9 using a cutoff score of 11 or higher [1]. Youth were categorized as having externalizing behavior if their score was ≥ 7 on the Pediatric Symptom Checklist (PSC) externalizing scale [2,3]. χ^2 tests and Wilcoxon rank sum tests were used to compare groups.

Results: Differences between groups included that youth with depression and externalizing symptoms had a higher rate of obesity and had higher self-reported functional impairment than youth with depression symptoms alone.

Conclusions: Adding screening for externalizing problems to existing recommendations for depression screening may help primary care providers to identify a high-risk depressed group of youth for referral to mental health services.

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1. Introduction

The US Preventive Services Task Force recommends screening for depression among adolescents [4]. Comorbidity between depression and externalizing behavior problems is common [5] and associated with increased risk of recurrence after treatment [6], higher lifetime health care utilization [7], more suicide attempts [8] and adult antisocial behavior [9]. Additionally, depressed mood has been shown to increase risk for delinquency among adolescent boys, and externalizing behavior problems predict subsequent depressed mood [10]. Although combined prevention programs for youth depression and delinquency are recommended, they are not current practice. Information regarding how youth with depression alone differ from youth with depression and externalizing behavior may

help inform needed referrals and treatment in primary care. This study examines youth who screened positive for depression, stratified based on self-reported elevated externalizing behavior, and evaluates differences in severity of depression symptoms, co-occurring symptoms, psychosocial correlates, health care utilization and functional impairment in order to inform the potential benefit of concurrent externalizing disorder screening.

2. Methods

This analysis used data from the AdoleSCent Health Study [1]. All study procedures were approved by the Group Health (GH) Institutional Review Board. Among a random sample of 4000 GH-enrolled youth ages 13–17, 2291 youth (60.7% of the eligible sample) completed a brief depression screen (see Richardson et al. [1] for more detail): the two-item Patient Health Questionnaire (PHQ-2). Youth with a PHQ-2 ≥ 3 and a gender- and age-matched sample of youth with a PHQ-2 < 3 were invited to participate in a baseline interview ($n=499$), and 444

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Table 1Demographic variables and parent-report of symptoms for youth self-reporting depressive symptoms (PHQ-9 ≥ 11), comparing youth with and without externalizing behavior

Variable	Overall n= 113	Depressed only (externalizing <7) n= 94	Depressed+ externalizing ≥ 7 n= 19	Test statistic	P (adjusted P)	Effect size (Hedges' g)
<i>Demographic variables</i>						
Age, mean (S.D.) ^a	15.25 (1.25)	15.32 (1.23)	14.90 (1.33)	$F_{1,111}=1.42$	.24 (.84)	0.34
Gender male, n (%) ^b	34 (30%)	30 (32%)	4 (21%)	$\chi^2_1=0.89$	.35 (.84)	NA
Race=Caucasian, n (%) ^b	73 (66%)	63 (69%)	10 (53%)	$\chi^2_1=1.94$	.16 (.84)	NA
Household income (k), mean (S.D.) ^a	56.12 (19.07)	55.89 (18.41)	57.18 (22.39)	$F_{1,104}=0.04$	.84 (.84)	0.77
With state insurance, n (%) ^b	9 (8%)	9 (10%)	0 (0%)	$\chi^2_1=1.98$	.16 (.84)	NA
Parents married, n (%) ^b	82 (75%)	73 (80%)	9 (47%)	$\chi^2_1=8.94$	0.003 (.06)	NA
<i>Parent report of internalizing and externalizing behavior</i>						
Parent report of internalizing behavior, mean (S.D.) ^a	5.05 (2.29)	4.99 (2.18)	5.33 (2.79)	$F_{1,108}=0.56$	.46 (.84)	0.15
Parent report of externalizing behavior, mean (S.D.) ^a	4.33 (3.03)	4.02 (2.91)	5.79 (3.26)	$F_{1,108}=5.38$	.02 (.38)	0.60

*Adjusted $P < .05$; ** $P < .01$; *** $P < .001$.^a Wilcoxon rank test.^b χ^2 test.

completed the interview. These analyses focus on a subset of youth ($n=113$) who screened positive on the nine-item Patient Health Questionnaire (PHQ-9) during the baseline interview using a cutoff score of 11 or higher, which has been found to have the highest sensitivity and specificity for the diagnosis of major depression [1]. Externalizing problems were defined based a self-report score of ≥ 7 on the Pediatric Symptom Checklist (PSC) externalizing scale [2,3], a widely used screening questionnaire that has good consistency with the Child Behavior Checklist [2,3,11–15]. Parent report of the child's depressive

and externalizing symptoms using the Brief Parent Pediatric Symptom Checklist (PSC-17) [3] was used to validate youth self-report [16,17].

Groups were compared on (a) *demographic variables* (age, sex, race, mean household income for residence zip code, Medicaid or state insurance, parental marital status); (b) *severity of depression* measured by baseline PHQ-9 score and presence of suicidal ideation on either the PHQ-9 or the Child Diagnostic Interview Schedule; (c) *co-occurring symptoms* of anxiety on the Brief Self-Report of Childhood Anxiety Related Dysfunction (SCARED), medical comorbidity using the Pediatric

Table 2Comparison of depression severity, co-occurring symptoms, psychosocial correlates, health care utilization and functional impairment among youth with PHQ-9 ≥ 11 , with and without externalizing behavior

Variable	Depressed only (externalizing <7) n= 94	Depressed+ externalizing ≥ 7 n= 19	Test statistic	P (adjusted P)	Effect size (Hedges' g)
<i>Severity of depression</i>					
Baseline depression severity measured by PHQ-9 score, mean (S.D.) ^b	14.51 (3.32)	16.16 (4.62)	$F_{1,111}=1.93$	.17 (.84)	0.46
Suicidal ideation endorsement, n (%) ^a	52 (55%)	15 (79%)	$\chi^2_1=3.66$	.06 (.84)	NA
<i>Parent report of internalizing and externalizing behavior</i>					
Parent report of internalizing behavior, mean (S.D.) ^b	4.99 (2.18)	5.33 (2.79)	$F_{1,108}=0.56$	.46 (.84)	0.15
Parent report of externalizing behavior, mean (S.D.) ^b	4.02 (2.91)	5.79 (3.26)	$F_{1,108}=5.38$	.02 (.38)	0.60
<i>Co-occurring symptoms</i>					
Anxiety on the SCARED, mean (S.D.) ^b	3.11 (1.96)	3.84 (2.39)	$F_{1,111}=1.77$	.19 (.84)	0.36
Medical comorbidity, n (%) ^{a,c}			$\chi^2_2=1.64$	.44 (.84)	NA
Low	35 (38%)	8 (44%)			
Medium	28 (30%)	7 (39%)			
High	29 (32%)	3 (17%)			
Smoking, n (%) ^a	14 (15%)	2 (11%)	$\chi^2_1=0.25$	.62 (.84)	NA
Problem alcohol/drug behavior, n (%) ^a	37 (39%)	11 (58%)	$\chi^2_1=2.22$	.14 (.84)	NA
<i>Psychosocial correlates</i>					
Social support, mean (S.D.) ^b	28.14 (5.04)	26.58 (6.20)	$F_{1,111}=0.77$	.38 (.84)	0.30
Minutes of exercise (per week), mean (S.D.) ^b	88.85 (78.69)	110.28 (86.51)	$F_{1,111}=1.10$	.30 (.84)	0.27
Obesity, n (%) ^a	24 (26%)	13 (68%)	$\chi^2_1=12.95$	<.001 (.02)*	NA
Family history of depression, n (%) ^a	52 (58%)	12 (67%)	$\chi^2_1=0.42$	.52 (.84)	NA
<i>Health care utilization</i>					
No. of primary care visits prior year, mean (S.D.) ^b	2.06 (2.36)	2.05 (1.84)	$F_{1,111}=0.32$	.57 (.84)	0.004
No. of outpatient mental health visits in prior year, mean (S.D.) ^b	0.48 (1.59)	0.16 (0.69)	$F_{1,111}=0.85$	.36 (.84)	0.22
Parent-reported anxiety or depression treatment prestudy, n (%) ^{a,d}	33 out of 36 respondents (92%)	6 out of 7 respondents (86%)	$\chi^2_1=0.25$	.62 (.84)	NA
<i>Youth reported functional impairment</i>					
Functional impairment, mean (S.D.) ^b	22.07 (6.77)	30.64 (6.64)	$F_{1,111}=22.03$	<.001 (.02)*	1.27

^a χ^2 test.^b Wilcoxon rank test.^c $n=93$ for this analysis due to missing data.^d $n=43$ for this row due to missing data.* Adjusted $P < .05$; ** $P < .01$; *** $P < .001$.

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